STAT

[redacted]

CA 65-68
15 June 1965

U. S. Government
Washington, D. C.

Attention: Contracting Officer

STAT Subject: [redacted]
Monthly Progress Report

Gentlemen:

Pursuant to the requirements of subject Contract, we forward herewith one reproducible and two copies of the twenty-second monthly progress report.

Some delays have been experienced during the final testing phase which are postponing completion. At present, it appears that an additional four to six weeks will be required to complete the tests proposed and prepare the final summary report. However, a formal request is being submitted in a separate letter.

Very truly yours,

STAT [redacted]

Contract Administrator

OMS:ks

cc: Technical Representative w/enclosure

TWENTY SECOND MONTHLY PROGRESS REPORT

Model 933 Phasolver System
13 June 1965

1. Introduction

This is the twenty-second monthly progress report describing the accomplishments during the month of May, 1965. During this month, the testing program continued. This report details the results of the testing and outlines anticipated progress during the month of June, 1965.

2. Survey of Accomplishments

2.1 The following portions of test 2 of the Phase II testing procedure were completed:

A. Pattern Accuracy with Equal Amplitudes and Phase Quadrature Drive Signals - Paragraphs 2.2 and 2.3

B. Preliminary Balance Accuracy and Test Repeatability - Patterns III only, Paragraph 2.5

2.2 Interference between the 100 mc counter and the Model 933 electronics unit, which caused false readings to occur at certain functions, was noted and corrected.

2.3 Modification of the test fixture to provide smooth linear motion. The continual movement of the driver plate over the coupler plate caused "galling" of the metal "feet" upon which the driver plate moves. This condition caused difficulty in obtaining good repeatability.

3. Result of Testing

3.1 Pattern Accuracy with Equal Amplitudes and Phase Quadrature Drive Signals

The "Bow-Tie" pattern and the old Model 915B-1 pattern showed considerably larger errors under these conditions than had been calculated. The 915B-1 pattern exhibited a peak to peak error of approximately 60 microns in a pole pair. The new "Bow-Tie" pattern had an error of 45 microns peak to peak. Although the error is quite large, our experience with rotary phasolvers indicates that this error can be reduced by approximately 40 times by balancing. This would yield an absolute accuracy of better than $\pm$ 1 micron with either pattern.

3.2 Balance, Accuracy, and Test Repeatability

Preliminary data indicates that an absolute accuracy of better than $\pm$ 1 micron can be obtained. The difficulties in obtaining good repeatability due to thermal effects of the gage blocks have been investigated and some corrective action implemented.

The problems noted above regarding the 100 mc counter and the fixture "galling" unfortunately caused a loss of over two weeks in testing time. In addition, the required correction to the test fixture increased the gap to 0.0027" from 0.0015". The modification dictates that the balance accuracy tests be performed again to obtain valid comparison data for all future testing.

4. Anticipated Progress During June, 1965

4.1 Continue Phase II Test Program.
4.2 Continue Investigation of Nonlinearity of Phasolver Test Set.